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NOTE ON SOME FAINT EARLY TYPE STARS WITH LARGE PROPER MOTIONS

Among the stars whose proper motions are given by Innes in *Circular 19 of the Union Observatory,* there are several faint stars whose spectra are described as Class A in the *Henry Draper Catalogue,* with unusually large proper motions. For these stars the table below gives the number in Innes's catalog and the H. D. catalog, the Right Ascension and Declination for 1900.0, the total annual proper motion and its direction, the *Henry Draper* visual magnitude and spectral class. The last column gives the quantity $m + 5 \log \mu + 5$, the function of the proper motion μ corresponding to the absolute magnitude and henceforth denoted by $M\mu$.

Innes No.	Henry Draper No.	R. A.			Dec.		μ	p	Mag.	Spec.	$M\mu$
		h	m	s	°	′	″	°			
20	2514	0	23	42	—66	27.9	0.126	269.0	8.6	A2	9.1
163	37713	5	35	29	—25	12.1	0.160	149.8	8.4	B9	9.4
221	61596	7	34	55	—41	55.7	0.214	278.0	9.3	Ao	11.0
227	63452		43	49	—48	39.4	0.497	273.5	9.2	A3	12.7
229	64101		47	9	—33	48.7	0.425	94.0	8.3	Ao	11.4
232	65620		54	26	—43	13.8	0.320	358.0	9.2	B9	11.7
237	69126	8	10	18	—41	9.8	0.322	259.3	8.7	B9	11.2
254	78523	9	3	38	—31	52.3	0.306	91.9	8.5	A2	10.9
259	81680		21	59	—45	9.7	0.286	270.0	9.64	Ao	11.9
268	85103		44	28	—43	33.3	0.229	244.2	7.9	A2	9.7
292	98177	11	12	28	—43	16.4	0.233	249.9	7.9	A2	9.7

From an unpublished investigation on the relation between proper motion and spectral class, dealing with over 10,000 stars between 0 and 12 hours of right ascension, it was found that the mean $M\mu$ for a Class A star is about $+ 3^m.8$. The stars mentioned above have a mean $M\mu$ of $10^m.8$ and are thus fainter than the average star of their class by not less than 7 magnitudes and are about as faint as the fainter specimens of the G and K dwarfs.

It is remarkable that among the 10,000 stars mentioned, the fainter ones of which naturally belong for the greater part to the northern hemisphere, only six more A stars with $M\mu$ fainter than 10.0 are found, five of which are brighter than $11^m.7$. The only fainter one is the brighter companion to o^2 *Eridani,* whose $M\mu$ is $17^m.8$. Other faint white stars with high values of $M\mu$ are the companion of *Sirius,* 14.6 probably F, and van Maanen's F Star, $19^m.7$. (These PUBLICATIONS, **29**, 258, 1917.)

It would be of interest if southern observers tested these stars for parallax and radial velocity. No. 2 of the list looks promising for radial velocity, as it is at a distance from the solar antapex of less than 8° and has a proper motion of 0″.160.

WILLEM J. LUYTEN.

Mount Hamilton, Jan. 5, 1922.

NOTE ON HERTZSPRUNG'S ECLIPSING VARIABLE IN PRÆSEPE

It was announced by Hertzsprung[1] that a 13^{m} star in *Præsepe* was subject to light variations, which were subsequently[2] shown to be of the eclipsing type. By means of older observations on photographs taken by Max Wolf, the ephemeris was given as

$$\text{Min.} = \text{J. D. } 2417989.746 + 1^{d}.0929292\ (E-2984).$$

From a series of plates taken with the Crossley Reflector on January 15, 1922, a determination of the time of minimum was made. On account of bright moonlight and clouds prevailing throughout the exposures, the variable was not shown on the plates during the time of actual minimum and was only followed as faint as $14^{m}.3$. By assuming the light-curve to be symmetrical with respect to the minimum, a fairly accurate determination of the exact time of minimum could be made by taking the mean of the times when the variable reached the same brightness on the descending and the ascending branches of the curve.

The minimum was thus found to have occurred at January 15, 1922, $19^{h}0^{m}$ G. M. T. = J. D. 2423070.792 or $0^{d}.018$ later than the ephemeris predicts for $E = 7633$. Assuming the zero epoch to be correct, it seems that a correction of $+ 0^{d}.0000039$ should be applied to the period, bringing it to $1^{d}.0929331$. It may be stated that the mean error of the period as determined by Hertzsprung is $0^{d}.0000042$.

From the shape of the light-curve it is judged that the minimum is between $15^{m}.0$ and $15^{m}.5$; the normal magnitude is $12^{m}.7$, all on Hertzsprung's photographic scale. The duration of the eclipse is about 3½ hours.

WILLEM J. LUYTEN.

Lick Observatory, Mount Hamilton,
January 16, 1922.

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[1] A. N., **203**, 265.
[2] A. N., **205**, 33.